

I Claim:

1. An light emitting semiconductor package including:
 - a) a semiconductor chip having a top surface and a bottom surface and having
at least one light emitting device formed in the chip which emits
electromagnetic radiation at one or more wavelengths from the top surface;
 - b) a first hollow cap having a central portion and a first perimeter wall
extending from the perimeter edge of the central portion with the free edge
of the first perimeter wall bonded to the top surface to provide a first cavity
and which, in plan view, overlays part or all of at least one light emitting
device, said central portion including at least one region which is at least
substantially transparent or translucent to electromagnetic radiation at said
one or more wavelengths; and
wherein the first cap has been bonded to the semiconductor chip at the wafer stage
prior to separation of the wafer into individual packages.
2. The package of claim 1 wherein the at least one region refracts said electromagnetic
radiation emitted by said at least one device.
3. The package of claim 1 wherein the cap further includes at least one attachment
means for attaching an electromagnetic radiation transmitting cable or fiber to the cap,
whereby at least some electromagnetic radiation emitted from the at least one device passes
through said at least one region into the cable or fiber.
4. The package of claim 3 wherein the at least one attachment means includes a second
perimeter wall extending from the periphery of the central portion away from the first
perimeter wall.
5. The package of claim 3 wherein the at least one attachment means includes at least
one recess in the central portion.

6. The package of claim 1 further including a second cap bonded to the bottom surface of the chip.

7. The package of claim 1 further including a second cap bonded to the bottom surface
5 of the chip, said second cap, in plan view, overlaying part or all of the at least one device.

2009-03-04 10:04:07